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Spinal verses Local ischiorectal block anesthesia for surgical treatment of hemorrhoids: A retrospective observational study

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Abstract

Background: Even with day-care procedures gaining popularity, excisional hemorrhoidectomy still remains the most effective treatment in Grade III/IV hemorrhoids and Grade II hemorrhoids that do not respond to medicines. People with hemorrhoids tend to self-medicate instead of seeking proper help, and only $1/3^{rd}$ of patients present to a physician for treatment. An alternate mode of anesthesia that bridges the gap between day-care procedures and traditional excisional hemorrhoidectomy could help overcome this limitation.

Objectives: The study aimed to compare local and spinal anesthesia for open hemorrhoidectomy in terms of post op-pain, complications, analgesia, and hospital stay.

Methods: Forty participants were divided randomly into two groups with one group receiving spinal anesthesia and the other, local anesthesia.

Results: Significant reduction in hospital stay and post-op complications were observed with the use of local anesthesia as compared to that with spinal anesthesia.

Conclusions: Local anesthesia can be used instead of spinal anesthesia for open hemorrhoidectomy to reduce post-op complications and post-op hospital stay.

Keywords: Hemorrhoids, spinal anesthesia, ischiorectal block anesthesia, open hemorrhoidectomy, Milligan-Morgan hemorrhoidectomy

INTRODUCTION:

Hemorrhoids are a normal anorectal feature that aid in anal closure and allow for fine control of anal continence. Hemorrhoids were first identified through microscopic histology; they were then linked with anorectal physiology to provide proof of their actual composition and makeup. This established the pathophysiology of hemorrhoid in the human anorectum. Thomson, based on their anatomic studies, popularized the term "cushions" to describe the intricate intertwining of muscle, connective tissue, veins, arteries, and arteriovenous communications that constitute hemorrhoids; this supports the sliding anal canal theory of

Gass and Adams [1-3]. Muscle tissues are replaced by collagen fibers, as observed microscopically; this contends the idea that hemorrhoids form as a result of degradation of the tissues that support the anal cushions. The arterial and venous blood vessel walls as well as the connective tissue are severely inflamed leading to ischemia followed by mucosal ulceration and bleeding [4] Presently, hemorrhoids are defined as the symptomatic expansion and distal displacement of the anal cushions.

Ageing is a risk factor for symptomatic hemorrhoids; here, the muscle mass is gradually lost while connective tissue increases. The current "rich" or low-residue diet, which causes constipation and straining resulting in the prolapse of the cushions, are further contributors. Pathologic tests reveal arteriovenous connections, which explains the brilliant red or arterial origin, rather than dark or venous origin, of the hemorrhoid bleed. Anorectal physiology investigations indicate a rise in internal sphincter pressures that return to normal after surgical intervention. [1-3]

The accurate prevalence rate of hemorrhoids is difficult to assess; however, an increasing trend in the numbers suggests an overall increase. Hemorrhoids affect 25% of Britishers and 75% of Americans at some point in their lives; they particularly affect pregnant women and elderly people. [5,6]

An ideal procedure for hemorrhoids should be efficient, with a low rate of recurrence, low level of post-operative pain to enable a quick return to daily activities, and be safe with no morbidity. Conventional hemorrhoidectomy (CH) entails the use of scissors to cut the hemorrhoidal cushions off the internal anal sphincter and the closure of the vascular pedicle. [7]; it is still regarded as the "gold standard", especially when recurrence is the primary factor. However, it leads to severe post-op discomfort, perianal discharge, and irritability.

The methods outlined by Milligan et al. [8] and Ferguson et al. [9] are the most used. Open hemorrhoidectomy was first described by Milligan and Morgan in 1937; here, the wound is left open following the CH. Nowadays, diathermy is used for CH instead of scissors. Open diathermy hemorrhoidectomy requires substantially less anesthesia than that required for the procedure with scissors; in addition, it has a significantly reduced operating time. Employing diathermy does not enhance the risk of post-op bleeding without pedicle ligation. The use of local anesthesia, independently or in combination with general or regional anesthesia reduces post-op pain. [10]

Both spinal and ischiorectal block anesthesia are regularly used in the treatment of hemorrhoids. However, traditionally, ischiorectal block anesthesia was reserved for debilitated patients, cardiac patients, patients with spinal deformities, and patients unfit for spinal anesthesia. There is a paucity of data on the use of ischiorectal block anesthesia in Indian patients, irrespective of such complications.

In this study, we assessed the use ischiorectal block anesthesia for all patients to evaluate the possibility of making its use routine in all cases.

MATERIALS AND METHODS:

Patients and data collection

This is a retrospective observational study performed in a tertiary care hospital in Belagavi, Karnataka. The study was approved by the research ethics committee of the institute. Data of 40 patients, who underwent open hemorrhoidectomy under either spinal or ischiorectal block anesthesia between March 2021 and February 2022 were chosen following the assessment for eligibility, with the help of computer-generated random numbers. The patient data were placed in two groups: 20 in the ischiorectal block and 20 in the spinal anesthesia groups. Patients with refractory Grade 2, Grade 3, and Grade 4 hemorrhoids willing for surgery were included. Exclusion criteria. Written informed consent was obtained from all patients.

Preparation for surgery

The patients were kept NBM for 8 h prior to surgery. They were given per rectal enema on the night before and on the morning of the surgery. All the patients in this study were operated on by the primary authors (General Surgeons) in the same operation theatre. All hemorrhoidectomies were performed by using an open Milligan-Morgan method in lithotomy position.

Administration of anesthesia

Spinal anesthesia was administered as per routine practice with 0.5% bupivacaine heavy. Ischiorectal block anesthesia was administered in the lithotomy position; 20 ml anesthesia solution (10 ml adrenaline with 2% lignocaine in 10 ml sterile water) was prepared and after

palpating for the ischial spine, the solution was infiltrated all around the anal canal and incision site, keeping the left index finger as the guide.

Post-surgical routine

Following the removal of the hemorrhoids, 2% xylocaine gel was applied locally and a dry dressing was applied with an anal pack kept in situ. The pack was removed after 24 h of surgery.

Statistical analysis

We used mean and standard deviations for analyzing quantitative variables, and frequencies and proportions for categorical variables. We used median and interquartile range (IQR) for non-normally distributed quantitative variables. Data are represented using bar diagrams and box plots.

We visually checked the histograms and normality Q-Q plots for the normal distribution of the quantitative variables within each category of the explanatory variable. Shapiro-Wilk test was used to assess normal distribution; p-value of >0.05 indicates normal distribution.

We used Chi square test /Fisher's exact test to analyze the categorical outcomes between groups. Fisher's exact test was used when the overall sample size was < 20 or when the expected number in any one of the cells was < 5.

For normally-distributed quantitative parameters, the mean values were compared between study groups using independent sample *t*-test (Two groups)

Statistically significance was set at p value <0.005. IBM SPSS version 22 was used for all statistical analysis.

RESULTS

Table 1: Comparison of clinical presentation with the two types of anesthesia (n=40)

Clinical	Type of anesthesia	Chi square	P-value

presentation	**IRB anesthesia (n=20)**	**Spinal anesthesia (n=20)**		
Mean age	51.55 ± 16.35	38.9 ± 15.44		0.016
Male/female	17/3	16/4	0.173	1,000
Grade II/III/IV	5/13/2	5/10/5	1.677	0.432
Bleeding	0 (0%)	4 (20%)	19.94	0.003
Bleeding, Constipation	5 (25%)	1 (5%)		
Bleeding, Mass per anum	0 (0%)	5 (25%)		
Constipation	0 (0%)	2 (10%)		
Mass per anum	10 (50%)	3 (15%)		
Mass per anum, Constipation	5 (25%)	3 (15%)		
Mass per anum, Thrombosed	0 (0%)	2 (10%)		

Figure 1: Cluster bar chart comparing the hemorrhoid grade between the two types of anesthesia (n=40)

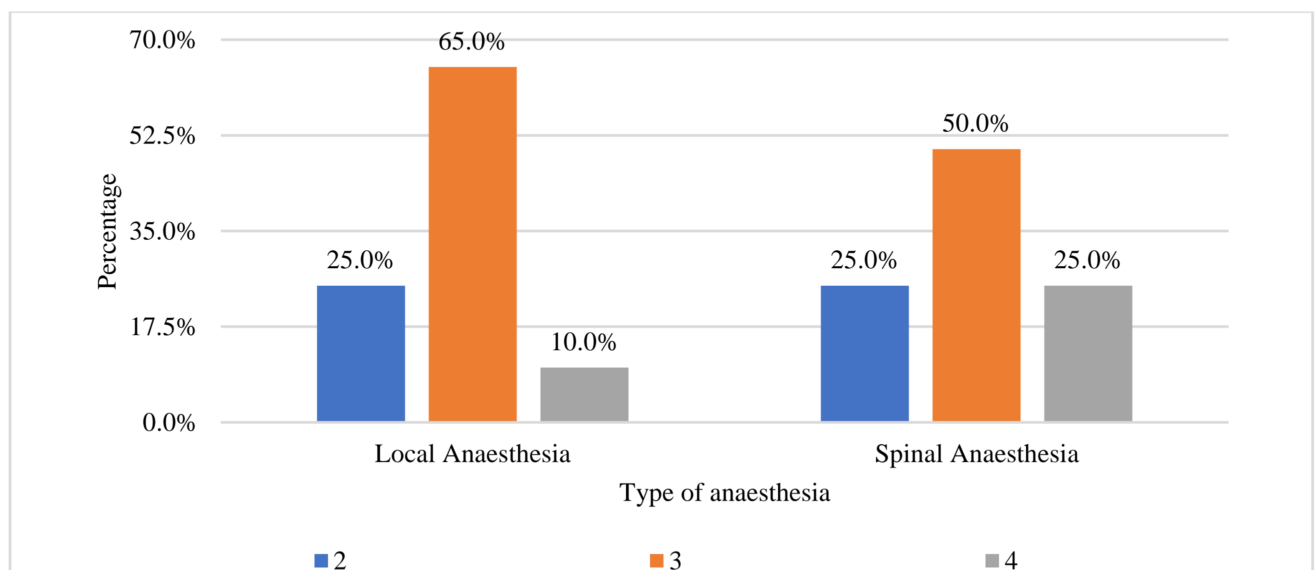

Table 2: Comparison of pain score between the two types of anesthesia (n=40)

Pain score	**Type of anesthesia**		**Chi square**	**P-value**
	IRB anesthesia (n=20)	**Spinal anesthesia (n=20)**		
At 30 min				
No Pain	18 (90%)	18 (90%)	0.000	1.000
Mild	2 (10%)	2 (10%)		
At 1 h 30 min				
No Pain	11 (55%)	15 (75%)	1.758	0.185
Mild	9 (45%)	5 (25%)		
At 6 h				
No Pain	16 (80%)	13 (65%)	1.129	0.288
Mild	4 (20%)	7 (35%)		
At 24 h				
No Pain	20 (100%)	16 (80%)	4.44	0.108
Mild	0 (0%)	3 (15%)		
Moderate	0 (0%)	1 (5%)		

Table 3: Comparison of post-op parameters between the two types of anesthesia (n=40)

Post-op	**Type of anesthesia**		**Chi square**	**P-value**
	IRB anesthesia (n=20)	**Spinal anesthesia (n=20)**		
Analgesia				
Excellent	18 (90%)	12 (60%)	4.98	0.083
Poor	0 (0%)	1 (5%)		
Satisfactory	2 (10%)	7 (35%)		

Complications				
Hemorrhage	1 (5%)	2 (10%)	9.47	0.049
Headache	0 (0%)	4 (20%)		
Infection	0 (0%)	1 (5%)		
No complication	19 (95%)	11 (55%)		
Urinary retention	0 (0%)	2 (10%)		

Figure 2: Cluster bar chart comparing the post-op analgesia between the two types of anesthesia (n=40)

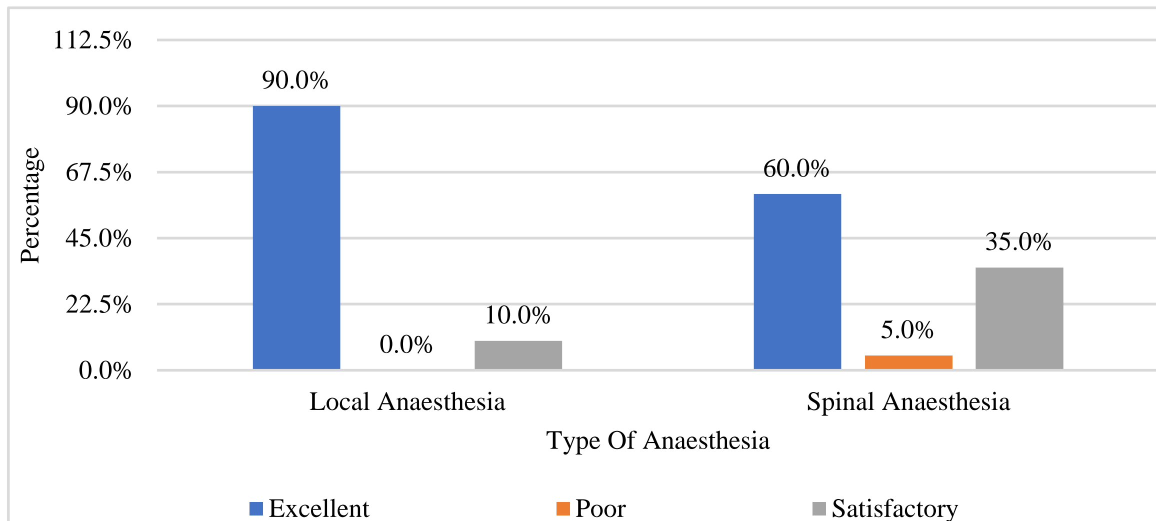

Figure 3: Cluster bar chart comparing the post-op complications between the two types of anesthesia (n=40)

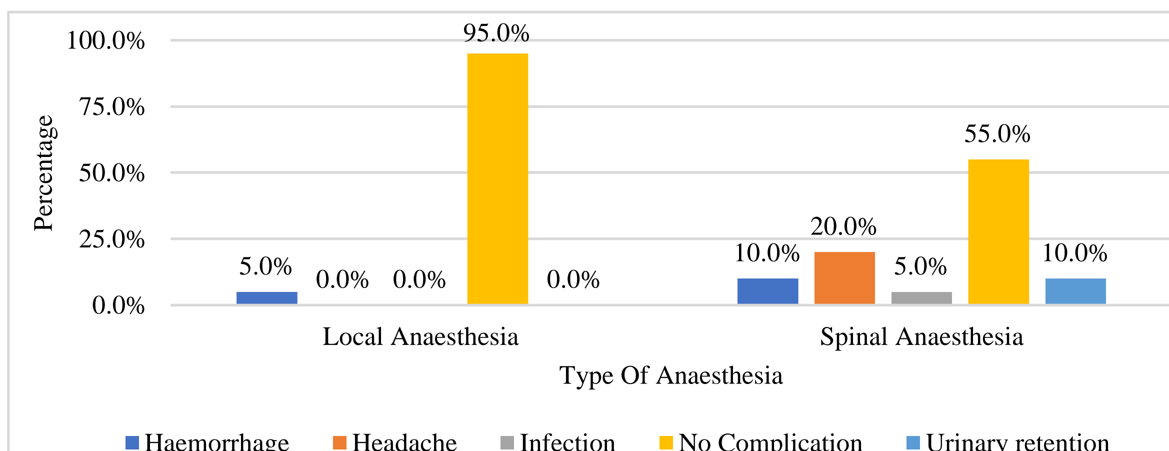

Table 4: Comparison between the mean post-op stay with the two types of anesthesia (n=40)

Parameter	Type of anesthesia (Mean± SD)		P value
	IRB anesthesia (n=20)	Spinal anesthesia (n=20)	
Post-op stays	0.29 ± 0.04	3.8 ± 1.82	<0.001

The study population consisted mostly of males with a mean age of about 45 years. The most common clinical presentation among the study population was mass per anum followed by mass per anum with constipation and bleeding PR with constipation. Both groups had patients with different grades of hemorrhoids, with the maximum patients having grade 3 hemorrhoids (Table 1).

No significant difference was observed in the pain scores at different post-op times between the two groups. However, 100% of the patients administered regional anesthesia had no pain after 24 h, while 20% of the patients administered regional anesthesia still had pain after 24 h of surgery (Table 2).

No significant difference in analgesia was observed between the groups; 90% of patients administered regional anesthesia had excellent post-op analgesia compared to only 60% of the patients administered spinal anesthesia.

Post-op complications were significantly lower with the use of regional anesthesia, with 95% of patients having no complications. Patients administered spinal anesthesia had complications like headache, hemorrhage, and urine retention (Table 3).

The post-op hospital stay was significantly lower in the regional anesthesia group, and the patients could be discharged on the same day. This was not possible with patients in the spinal anesthesia group, where patients had to be hospitalized for 3−4 days (Table 4).

DISCUSSION:

Several outpatient procedures such as rubber band ligation, laser therapy, injection sclerotherapy, radio frequency ablation, cryotherapy, and infrared coagulation are used for treating hemorrhoids. However, these are only useful for low grade (I-II) hemorrhoids.

Hemorrhoidectomy is performed in different way. All of them focus on the resection of both internal and external hemorrhoids and the ligature of the main supplying vessels. Hemorrhoids are caused by vascular hyperplasia of the arteriovenous network within the anorectal submucosa. [7] Hemorrhoidectomy entails surgery on the sensitive anoderm, which is rich in nerve endings. Over the years, several possible ways of reducing pain and discomfort post-surgery have been proposed, including the use of multimodal analgesia [11-13] for reducing post-op anal spasm [14,15], restricting surgery to one hemorrhoid at a time, avoiding a closed technique [16], the use of bulky adherent dressings, rectal application of metronidazole, pre-emptive analgesia [17-19], diathermy dissection [20], caudal block, preoperative lactulose, pudendal and perineal blocks, stapled anopexy [21].

Post-op pain is a major concern in hemorrhoidectomy. Various excision techniques have been proposed for reducing post-op pain. However, they produced limited or mixed results. [22] Hemorrhoidopexy with the use of circular staplers reduces post-op pain and aids faster recovery as compared to that with conventional excision procedures. [22] However, two recent meta-analyses, comparing the results of hemorrhoidopexy and conventional hemorrhoidectomy with radio frequency scalpel, did not indicate any difference in the reduction of post-op pain. [23] A studycomparing local vs spinal anesthesia, proposed the use of a local anesthesia which the surgeons could administer themselves using a cocktail of local anesthesia, 20 cc, composed of bupivacaine hydrochloride 0.5% with adrenaline and lignocaine hydrochloride 2% in equal amounts, which was injected around anal skin using a 25G needle. The left index finger is inserted into the anal canal as a guide. The right hand is used to maneuver a syringe with a 21G needle containing the same solution to inject into the intersphincteric plane on four sides of the anus. This study reported a shorter hospital stay, lower pain scores, and lower post-op complications when using local anesthesia [24]; these results are similar to our observations.

The administration of local anesthesia had similar tolerance and clinical outcome as compared to that with general anesthesia and was associated with a shorter hospital stay and lower cost in XXXXX. However, the post-op pain was worse when using local anesthesia compared to that with general anesthesia at 90 min after surgery; this was similar to the

results obtained in our study. This study does not take into account the grade of hemorrhoids. [25]

An RCT comparing local and general anesthesia found no differences between the two groups in terms of operating time, post-op pain, nausea, analgesic requirements, or patient satisfaction with the method of anesthesia. [26] However, we found a significant reduction in post-op stay and complications when using local anesthesia.

A meta-analysis comparing local anesthesia with other types of anesthesia showed a significantly lower relative risk for the need of rescue analgesia (RR 0.32), intra-operative hypotension (RR 0.17), headache (RR 0.13), and urinary retention (RR 0.17) for local anesthesia when compared to that with regional anesthesia. Administering only local anesthesia could be an alternative to regional anesthesia for excisional hemorrhoidectomy with reduced complications and reduction in the amount of post-operative analgesia required [27].

A meta-analysis comparing local anesthesia with spinal anesthesia showed that local anesthesia is associated with significantly lower post-op pain, need for a rescue analgesia ($P = 0.002$), urinary retention ($P = 0.0001$), and headache ($P = 0.0003$) compared to that with SA. However, there was no significant difference in rectal bleeding ($P = 0.70$) and operation time ($P = 0.19$) between local and spinal anesthesia. Therefore, local anesthesia is an attractive choice in day-case surgery for those not fit for general anesthesia or refuse the modality [28].

This is the first study to explore the use of regional anesthesia in hemorrhoidectomy in Karnataka. In addition, day-case procedures are uncommon in suburban areas, and this study could give surgeons the confidence to use regional anesthesia as an adjunct to spinal in hemorrhoidectomy.

CONCLUSION:

Ischiorectal block anesthesia can safely replace spinal anesthesia in open hemorrhoidectomy. It ensures faster post-op recovery, lesser post-op complications, and reduces the cost of hospitalization due to reduced post-op hospital stay. Further studies with a large sample size

are warranted to implement the use of regional ischiorectal block anesthesia as a standard procedure in open hemorrhoidectomy.

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